FCLP

DEFENSE NUCLEAR AGENCY
FIELD COMMAND
KIRTLAND AIR FORCE BASE, NEW MEXICO 87115

405202

8 NOVEMBER 1977

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SUBJECT: Bair Committee Recommendation

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1. The report of the committee of consultants which met at Nevada Operations Office on 15-17 August 1977, recommended that more specific guidance for application of the cleanup criteria at plutonium levels between 40 and 400 pCi/g be developed for the Task Group commander.

2. Criteria available for guidance are:

a. The EIS (Section 5, Para 5.5.3.2).

"Boken, Lujor, and Runit plutonium concentrations greater than 400 pCi/g would be excised and all other concentrations between 400 and 40 pCi/g would be dealt with on an individual basis as described in AEC Task Group Report. Concentrations of less than 40 pCi/g would not be disturbed."

b. The OPLAN 600-77 (Tab E to Annex C).

Excise all areas exceeding 400 pCi/g, whether surface or subterranean. When an area of one-half hectare exceeds 100 pCi/g, excise to some lower level. When an area of one-quarter hectare exceeds 40 pCi/g, excise to some lower level. In no case is the lower level to be below local background. This is the guidance which the consultant committee found to require clarification.

3. Additional information.

a. The AEC Task Group Report provides guidance for making the 40-400 pCi/g case-by-case evaluation as follows:

"a. Islands with soil levels in the above range may be divided into two categories, those of sufficient size for construction of permanent houses, and those that are not."

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"b. Removal of 239 Pu contaminated soil is better justified within the range above for the larger islands such as Janet or Sally where permanent housing may some day be located and for near surface locations on the larger islands."

"c. The smaller islands may be considered of less concern. Their long term outlook is uncertain since they are sometimes eroding away. Small islands may be washed over by storm waves and are not a safe site for permanent housing. From that viewpoint, they are in the same category as unnamed sandbars along the reef where other islands may have disappeared or be forming."

"d. The amount of effort that properly may be given to soil removal in this range increases as the soil concentration increases."

b. The Enewetak Atoll Master Plan for Island Rehabilitation and Resettlement, Volume I, provides the following planned use for islands (Table 4-1).

(1) Major Inhabited Islands: Medren, Enewetak, Japtan.

(2) Intensive Agriculture Uses: Lujor, Alembel, Lojwa, Aomon, Bijire, Aej, Ananij, Enjebi (Enjebi to be planted at a later date).

(3) Food Gathering and Temporary Uses: Elle, Bokenelab, Kidrinen, Mijikadrek, Biken Kidrenen, Ribewon, Boken, Mut, Ikuren, Louj, Kirunu, Bokombako, Bokoluo, all other Islets.

(4) Runit island is to be quarantined indefinitely.

c. The specifications for the island site preparation, and Enewetak rehabilitation, in section 02811, Agricultural Development, shows the following agricultural planting:

ISLAND	USABLE ACREAGE (ACRES)	COCONUT	DWARF COCONUT	BREAD-FRUIT	PANDANUS
Enewetak	166	10,110	450	300	450
Medren	193	12,824	180	120	180
Japtan	63	3,755	300	100	300
Ananij	13	819	---	23	158
Alembel	23	1,394	---	---	---
Lojwa	25	1,776	---	---	---
Bijire	34	2,138	---	---	---
Aomon	66	4,014	---	---	---
Lujor	38	2,331	---	---	---
Aej	28	1,736	---	---	---
TOTAL	649	40,897	930	543	1,088

(Enjebi is not included in initial plantings)

d. Volume III of the Environmental Impact Statement (EIS) contains the following "proposed cleanup actions" and "advisory controls."

Proposed Cleanup Actions

After weighing the various problems concerned with the radioactivity, the physical hazards, the peoples' desires and the resources that might be available in order to strike a practical balance between the various factors, it is proposed to perform the following operations on Enewetak Atoll:

Cleanup of Radioactive Materials

1. Radioactive scrap from all islands would be collected and entombed in one or both of the craters on Runit.

2. Plutonium on Aomon, Lujor and Boken in excess of levels established by the AEC/(ERDA)/(DOE) would be dug up and placed on Runit. The material on Runit would be dug up until measurements show that the levels are below those established by the AEC. This material would be entombed in one or both craters on Runit.

Cleanup of Physical Hazards

1. Physical hazards would be removed from all islands in the atoll.

2. Obstructions to the development of housing and agriculture areas would be removed from the residential and agricultural islands.

3. The structures and facilities developed or rehabilitated for the cleanup work force which would be useful to the Enewetak people would be left upon completion of the task, if not required by the United States Government.

Advisory Controls

1. The quarantine that was established on Runit by the United States Air Force during 1972 would continue in effect until it could be shown that people visiting the island would receive the smallest dose possible.

2. The Enewetak people could live only on the southern islands Jinedrol through Kidrenen. The could not live on Enjebi or any of the northern islands. Based on purely radiological decay and if no remedial measures regarding local food production were taken, more than 30 years would be required before the projected radiological doses would fall to acceptable

levels. However, the ERDA would continue to study Enjebi and the northern islands to determine if any reliable methods can be found to reduce expected exposures to acceptable levels within a shorter period of time.

3. Travel and short visits to all of the islands would be permitted with the exception of Runit. Runit would be out of bounds until some indefinite future time as it may be declared safe.

4. Fishing for food anywhere in the lagoon would be permitted.

5. Capturing wild birds and gathering wild bird eggs would be permitted on any island except Runit.

6. Coconuts could be grown on the southern islands Jinedrol through Kidrenen and on Mijikadrek through Billae. Coconut cultivation would not be permitted on the northwest islands of Bokoluo through Enjebi and Runit.

7. Pandanus and breadfruit could be cultivated on the southern islands only. Pandanus from any of the northern islands could not be eaten until they have been tested and declared safe.

8. Pigs, chickens and other animals used for domestic meat must be grown on the southern islands only. (Jinedrol through Kidrenen).

9. Coconut crabs could be taken and eaten only from the southern islands. (Jinedrol through Kidrenen)

e. Volume I of the EIS, paragraph 5.5.3.2, states that the following actions would be taken to cleanup the atoll:

.Physical hazards would be removed from all islands.

.Obstructions to development of habitations and agriculture would be removed.

.Radioactive scrap would be removed from all islands in the atoll.

.Boken, Lujor, and Runit plutonium concentrations greater than 400 pCi/g would be excised and all other concentrations between 400 and 40 pCi/g would be dealt with on an individual basis as described in AEC Task Group Report. Concentrations of less than 40 pCi/g would not be disturbed. Cleanup of Pu is expected to be performed iteratively until a sufficiently low concentration level well below 40 pCi/g is attained. Some 79,000 cu yds of soil are estimated to be in this removal.

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.Plutonium would be removed from the three burial crypts on Aomon.

.Unsalvable non-radioactive and non-combustible material would be disposed of by dumping in the lagoon at selected locations for forming artificial reefs.

.Radioactive materials would be disposed of as discussed in Section 5.4.3.2.3, namely by containment in Lacrosse and, if necessary, Cactus craters on Runit.

4. From the information cited, it appears that the intent of the case-by-case soil cleanup criteria is to maximize the economic benefits, and minimize long term radiation exposure to the Dri-Enewetak by judicious application of available resources. Decision on resource expenditure should then be based on the following considerations:

a. Planned and/or potential (long term) use of the island to include consideration of relative size; relative amount of time occupied by Dri-Enewetak. Potential should consider need for future residence indicated by predicted population increase.

b. Extent and degree of contamination.

c. Extent of other cleanup action required. (Radioactive/non-radioactive debris removal)

d. Availability of cleanup resources, to include crater containment.

5. Under these considerations an island whose planned use is intensive agriculture should take priority over an island whose planned use is food gathering. An island whose planned use is food gathering, but whose size gives a potential for agriculture, should take priority over an island whose size will not support agricultural use. An island whose planned use is agriculture, but whose size give a potential for residential use, should have priority over any island not having residential potential use. Levels of contamination to be left after cleanup should consider the relative amount of time the island will be occupied by Dri-Enewetak. Relatively little time will be spent on food gathering islands, and the activities conducted there do not have a high resuspension potential. Time spent on agricultural islands will be higher than for food gathering islands but less than residential islands. Residential, or potential residential islands, should have the lowest levels of Pu 239/240 contamination after cleanup. The island of Runit constitutes a special case.

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Areas of contamination exceeding the 400 pCi/g level must be excised. Indefinite quarantine indicates that further cleanup is not warranted.

6. Based on such considerations the following guidance is recommended.

a. Highest priorities - Islands of size to be potential residential islands. These encompass islands of size greater than 50 acres, specifically Enjebi, Aomon/Bijire, and Lujor. Resources permitting, these islands should be cleaned to less than 40 pCi/g Pu 239/240 levels. (Condition C, OPLAN 600-77)

b. Secondary priorities - Islands of planned intensive agricultural use. These are islands identified in the Master Plan. In addition to the islands in highest priority, they include Alembel, Lojwa, and Aej. Resources permitting, these islands should be cleaned to less than 100 pCi/g Pu 239/240 levels. (Condition B, OPLAN 600-77)

c. Tertiary priority - Islands of planned food gathering use but whose size provides a potential for agricultural use. These are islands generally of 20 to 50 acres in size. While cleanup of levels below 400 pCi/g Pu 239/240 is not required, if resources permit, these islands should be cleaned to levels below 100 pCi/g Pu 239/240. This category includes the islands of Bokoluo, Bokombako, Louj, Boken and Kidrinen. (Condition B, OPLAN 600-7)

d. Lowest priority - Islands whose planned use is food gathering and whose size does not provide good potential for residence or agriculture. These are generally islands of less than 20 acres in size. Cleanup of contamination levels below 400 pCi/g Pu 239/240 is not warranted. This priority also applies to the island of Runit insofar as cleanup of areas contaminated to less than 400 pCi/g.

7. Recommendations by CJTG for case-by-case cleanup should be based on the attached island charts and review of available resources.

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1 Encl
Recommended Case-by-
Case Criteria

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1. COL Treat/FCZ/49568
2. 2 Nov 77 mk
3. ERDA Committee of Special Review Enewetak Cleanup Criteria (Bair Committee) recommends we provide more specific guidance for application of the case-by-case cleanup criteria. This letter transmits guidance developed.
4. Coord: FC Also coordinated with other Directorates in draft.

RECOMMENDED CASE-BY-CASE CRITERIA

1. The attached charts were prepared from tracings of island views presented in NVO-140. The "Soil Survey Data" shown are transcribed, for location and value, from NVO-140. Ground Zero and approximate locations were taken from the "Draft Enewetak Fact Book" and Volume II of the "Engineering Study for a Cleanup Plan". Burial sites were taken from these same two documents. Debris removal information was taken from computer print-out "Enewetak Cleanup Project - Job XE702". Intended use is from Enewetak Atoll Master Plan, Table 4-1.

2. Soil survey tables show locations generally from left to right/top to bottom across the island outline. Soil survey values were rounded to two digit numbers except for concentrations greater than 100 pCi/g.

3. Aerial survey data were transcribed from Aerial Survey June-July 1977 photos. Contours are only approximate, transcribed by relation to features identifiable in both NVO-140 and Aerial Survey Photographs. Approximate PU/AM ratios are as calculated by Dr Bramlitt, FCDNA.

4. The case-by-case criteria recommended for consideration is based upon intended and potential use. Where criteria recommended is "none" this simply means that application of condition B or C is not warranted by the intended use. As noted, the potential use may warrant application of condition B or C, if resources permit such application. In all cases condition A or D must be applied if the survey shows concentrations greater than 400 pCi/g PU 239/240.

5. The priority shown is the recommended priority for commitment of resources to that island. This priority is not intended to dictate the order in which work is performed.

6. These case-by-case criteria apply only to the cleanup of soil contaminated by PU 239/240 to levels between 40 and 400 pCi/g. The recommended criteria should not be applied to mandatory cleanup of contaminated and non-contaminated debris or to the mandatory cleanup of soil contaminated to levels in excess of 400 pCi/g PU 239/240. (Conditions A and D, Tab E, Appendix C, OPLAN 600-77.)

ENCLOSURE 1

[redacted]

RECOMMENDED CASE-BY-CASE CRITERIA (CONTINUED)

7. The island of Runit constitutes a special case. Application of conditions other than conditions A and D to this island are not warranted. The Enewetak Atoll Master Plan for Rehabilitation and Resettlement, volume 1, states that this island will be indefinitely quarantined. Under this consideration application of cleanup conditions below the mandatory 400 PCi/g level can not be justified.

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as

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